May 9, 1957

Dear Dr. Kandler:

Thank you very much for your Proteus L cultures, which arrived a few days ago. In accord with your own experience, we have been unable to restore their normal morphology by chemical supplementation of the medium.

On the other hand, we have now isolated a number of stable L-colony types from E. coli, all of which are restored by hydrolysates of the wild type. Some of them have been identified as new DAP auxotrophs. It seems likely that wall formation can be blocked at any of a number of critical steps, and the mutants which occur most frequently, or which have a selective advantage to allow their isolation, are different in different organisms.

There are doubtless other significant differences between Proteus and E. coli; e.g. not only is hypertonic sucrose quite unnecessary to protect the L-stage of the former, but is actually inhibitory. On the other hand, for E. coli, serum is quite inert.

It is fortunate that these problems are under study from different points of view, by different investigators. However, I do not believe that any of these findings make untenable the generalization that L forms are, in effect, protoplasts.

You may be interested that another of our colleagues in this field, Juhasz, from Budapest has made his way to Canada, and hopes in due course to resume this line of work. He has abandoned his ideas on easy filtrability of the Salmonella-L's, along with the politically-oriented Lepenscskaya-hypotheses of acellular organization.

I enjoyed your visit very much & hope we will have further occasions to talk things over. We have finally solved our photographic problems and have pictures of the same (not quite perfect) clarity as our own microscopic observations. I still have to try some of the other types of phase lenses you had suggested.

With best regards

Joshua Lederberg

Joshua Lederberg
Professor of Medical Genetics